

**AMENDMENTS TO THE CLAIMS**

1. (Currently Amended) A computer-implemented method comprising:
  - ~~using a computer having a graphical user interface;~~
  - providing a graphical user interface for defining at least one function within in
  - conjunction with a graphical representation of a finite state machine;
  - representing the at least one function graphically;
  - calling the ~~graphical function that is represented graphically in a modeling system from~~
  - within the finite state machine.
2. (Currently Amended) The method of claim 1 wherein ~~the defining step~~ the at least one function further comprises using a function block.
3. (Currently Amended) The method of claim 2 wherein ~~the defining~~ the at least one function ~~step~~ further comprises using a function prototype.
4. (Original) The method of claim 1 wherein the defining step further comprises using a function flow diagram.
5. (Currently Amended) The method of claim 4 ~~1~~ wherein ~~the representation of the function is represented graphically as~~ comprises a diagram comprising graphical elements.
6. (Currently Amended) The method of claim 1 ~~wherein the simulation system comprises~~ further comprising modifying the at least one function through ~~means for graphical diagramming.~~
7. (Original) A system comprising:
  - a computer comprising a graphical user interface, memory, storage, and at least one input device;
  - a computer program residing on computer readable media having instructions to cause the computer to:
    - receive user input defining at least one graphical function;
    - receive user input to use the at least one graphical function in a simulation.

8. (Original) The system of claim 7 wherein the user input defining the at least one graphical function is entered into a function block.

9. (Currently Amended) The system of claim ~~8~~7 wherein the user input defining the at least one graphical function includes a function prototype.

10. (Currently Amended) The system of claim 7 wherein the user input defining the at least one graphical function comprises a function flow diagram.

11. (Currently Amended) The system of claim 10 wherein the function flow diagram is comprised of graphical elements.

12. (Currently Amended) A computer program product, stored in a computer readable medium, comprising instructions to cause a computer to:

receive user input defining at least one graphical function for use in conjunction with a finite state machine; and

~~receive user input to use the at least one graphical function in a simulation~~ of a system represented by the finite state machine.

13. (Original) The computer program product of claim 12 wherein the user input defining the at least one graphical function is entered into a function block.

14. (Original) The computer program product of claim 12 wherein the user input defining the at least one graphical function includes a function prototype.

15. (Original) The computer program product of claim 12 wherein the user input comprises a function flow diagram.

16. (Currently Amended) The computer program product of claim ~~12~~15 wherein the function flow diagram is ~~a~~ comprised of graphical elements.

17. (Currently Amended) A system for modeling finite state machines comprising:  
a computer comprising a graphical user interface, memory, storage, and at least one input device;  
means to receive user input to define at least one graphical function;  
means to represent the graphical function ~~in as~~ a state flow diagram;  
means to use the graphical function in a simulation of at least one finite state machine.
18. (Currently Amended) The system of claim 17 wherein the user input to define ~~ing~~ the at least one graphical function is entered into a function block.
19. (Canceled)
20. (Currently Amended) The system of claim 17 wherein the user input to define ~~ing~~ the at least one graphical function includes a function prototype.
21. (Original) The system of claim 17 wherein the user input comprises a function flow diagram.
22. (Currently Amended) The system of claim ~~10~~ 21 wherein the function flow diagram is comprised of graphical elements.
23. (Currently Amended) The ~~method-system~~ of claim ~~5~~ 21 further comprising ~~the ability to hide~~ means for hiding the display of the function flow diagram based upon user input.
24. (Currently Amended) A method of operating a data processing system having a graphical user interface comprising:  
using the graphical user interface to create a graphical representation of a finite state machine ~~including and~~ a graphical representation of a function for use in conjunction with the finite state machine; and  
simulating ~~emulating~~ a system ~~the~~ represented by the finite state machine.
25. (Original) The method of claim 24 wherein the graphical representation of the function comprises a function prototype.

26. (Currently Amended) The method of claim ~~24-25~~ wherein the function prototype defines a textual format for invoking the function.

27. (Previously Presented) The method of claim 26 wherein the graphical representation of the finite state machine includes at least one invocation of the function using the defined textual format.

28. (Previously Presented) The method of claim 24 further comprising shadowing a function, wherein shadowing comprises using in a function invocation a function definition closest to a point of invocation of the function in a state diagram hierarchy.

29. (Previously Presented) The method of claim 24 wherein the function is exportable by a state chart and may be invoked anywhere in the finite state machine in which the chart appears, including other charts that define the finite state machine.

30. (Currently Amended) The method of claim 24 wherein ~~the emulates~~simulating the system represented by the finite state machine further~~on~~ comprises computer code generation.

31. (Previously Presented) The method of claim 24, wherein the graphical representation of the function comprises a function prototype defining a textual format for invoking the function; and wherein the graphical representation of the finite state machine includes an invocation of the function using the defined textual format.

32. (Currently Amended) A computer readable medium having encoded thereon:  
\_\_\_\_\_ instructions for causing a computer system to receive through a graphical user interface a graphical representation of a finite state machine ~~including and~~ a graphical representation of at least one function for use in conjunction with the finite state machine; and  
\_\_\_\_\_ instructions for simulating a system ~~emulate the~~ represented by the finite state machine.

33. (Previously Presented) The computer readable medium of claim 32, wherein the graphical representation of the function comprises a function prototype defining a textual format for

invoking the function; and wherein the graphical representation of the finite state machine includes an invocation of the function using the defined textual format.

34. (Currently Amended) In an electronic device, a method of graphically representing an event-driven system, comprising:

providing one or more block components representing a ~~selected state~~one or more states;  
providing one or more transition components representing transitions between the one or more ~~block components representing a selected state~~states; and  
providing a ~~block component~~ representing a function and coupled with at least one ~~of the one or more block components representing a selected~~ of the states or at least one of the transitions.

35. (Previously Presented) The method of claim 34, wherein the function accepts at least one argument and returns at least one result.

36. (Currently Amended) The method of claim 34, ~~wherein at least a subset of the one or more block components representing a selected state and~~ further comprising the invoking the function at one or more transition components ~~can invoke the function~~.

37. (Previously Presented) The method of claim 34, further comprising specifying data properties of the function.

38. (Previously Presented) The method of claim 34, further comprising associating a data item with the function.

39. (Previously Presented) The method of claim 34, wherein the function comprises a graphical function.

40. (Previously Presented) The method of claim 34, wherein the function has a plurality of configurable properties.

41. (Previously Presented) The method of claim 34, wherein the function defines a textual format for invoking the function.

42. (Previously Presented) The method of claim 34, further comprising providing a shadowing function, wherein shadowing comprises using in a function invocation a function definition proximally closest to a point of invocation of the function in a state diagram hierarchy.

43. (Currently Amended) In a graphical representation environment, a system for graphically representing an event-driven system, comprising:

one or more block components representing ~~a selected state~~ one or more states;  
one or more transition components representing transitions between the one or more  
block components representing ~~a selected state~~ the states; and  
a ~~block component~~ representing a function ~~and~~ coupled with at least one of the ~~one or more block components representing a selected states~~ or at least one of the transitions.

44. (Previously Presented) The system of claim 43, wherein the function accepts at least one argument and returns at least one result.

45. (Currently Amended) The system of claim 43, wherein at least a subset of the one or more block components representing ~~a selected~~ the states and the one or more transition components can invoke the function.

46. (Currently Amended) The system of claim 43, further comprising means for specifying data properties of the function.

47. (Currently Amended) The system of claim 43, further comprising means for associating a data item with the function.

48. (Previously Presented) The system of claim 43, wherein the function comprises a graphical function.

49. (Previously Presented) The system of claim 43, wherein the function has a plurality of configurable properties.

50. (Previously Presented) The system of claim 43, wherein the function defines a textual format for invoking the function.

51. (Currently Amended) The system of claim 43, further comprising means for providing a shadowing function, wherein shadowing comprises using in a function invocation a function definition proximally closest to a point of invocation of the function in a state diagram hierarchy.

52. (Currently Amended) A medium for use in a graphical representation environment on an electronic device, the medium holding instructions executable using the electronic device for ~~performing a method of~~ graphically representing an event-driven system, said instructions comprising the steps of instructions for:

providing one or more block components representing ~~a selected state~~ one or more states;  
providing one or more transition components representing transitions between the one or more block components representing ~~a selected state~~ the states; and  
providing a block component representing a function ~~and coupled with at least one of the one or more block components representing a selected states or at least one of the transitions.~~

53. (Previously Presented) The medium of claim 52, wherein the function accepts at least one argument and returns at least one result.

54. (Currently Amended) The medium of claim 52, wherein ~~at least a subset of the one or more block components representing a selected state and the one or more transition components can~~ invoke the function.

55. (Currently Amended) The medium of claim 52, further comprising instructions for accepting user input specifying data properties of the function.

56. (Currently Amended) The medium of claim 52, further comprising instructions for associating a data item with the function.

57. (Previously Presented) The medium of claim 52, wherein the function comprises a graphical function.

58. (Previously Presented) The medium of claim 52, wherein the function has a plurality of configurable properties.

59. (Previously Presented) The medium of claim 52, wherein the function defines a textual format for invoking the function.

60. (Currently Amended) The medium of claim 52, further comprising instructions for providing a shadowing function, wherein shadowing comprises using in a function invocation a function definition proximally closest to a point of invocation of the function in a state diagram hierarchy.

61. (New) A computer-implemented method for modeling a system using a graphical block diagram environment, said method comprising:

graphically representing a function for use in conjunction with a model within the graphical block diagram environment; and

textually invoking the graphically represented function within the model.

62. (New) The computer-implemented method of claim 61, wherein the model is represented as a finite state machine.

63. (New) The computer-implemented method of claim 62, wherein the finite state machine is a hierarchical finite state machine.

64. (New) The computer-implemented method of claim 62 further comprising:

associating the graphically represented function with at least one state or transition within the finite state machine.



65. (New) The computer-implemented method of claim 61, wherein the graphically represented function is represented as at least one of a finite state machine, a state flow diagram, a function flow diagram, and a graphical block diagram model.

66. (New) A medium holding instructions executable using the electronic device for modeling a system using a graphical block diagram environment, said instructions comprising instructions for:

graphically representing a function for use in conjunction with a model within the graphical block diagram environment; and

textually invoking the graphically represented function within the model.

67. (New) The medium of claim 66, wherein the model is represented as a finite state machine.

68. (New) The medium of claim 67 further comprising instructions for:

associating the graphically represented function with at least one state or transition within the finite state machine.

69. (New) The medium of claim 66, wherein the graphically represented function is represented as at least one or a combination of: a finite state machine, a state flow diagram, a function flow diagram, and a graphical block diagram model.

70. (New) A computer-implemented system for modeling using a graphical block diagram environment, said system comprising:

means for graphically representing a function for use in conjunction with a model within the graphical block diagram environment; and

means for textually invoking the graphically represented function within the model.

71. (New) The system of claim 70, wherein the model is represented as a finite state machine.

72. (New) The system of claim 71 further comprising:

means for associating the graphically represented function with at least one state or transition within the finite state machine.

73. (New) The system of claim 70, wherein the graphically represented function is represented as at least one or a combination of a finite state machine, a state flow diagram, a function flow diagram, and a graphical block diagram model.

74. (New) A graphical block diagram modeling system comprising:  
a graphical function for use in conjunction with a model; and  
a graphical representation of the model including a textual invocation of the graphically represented function within the model.

75. (New) The system of claim 74, wherein the model is represented as a finite state machine.

76. (New) The system of claim 75, wherein the finite state machine is a hierarchical finite state machine.

77. (New) The system of claim 75, wherein the finite state machine further comprises:  
at least one state or transition associated with the graphical function.

78. (New) The system of claim 74, wherein the graphical function is represented as at least one or a combination of: a finite state machine, a state flow diagram, a function flow diagram, and a graphical block diagram model.